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Question Paper Code : 51527

B.E./B.Tech. DEGREE EXAMINATION, MAY/JUNE 2016

Fourth Semester

Electronics and Instrumentation Engineering

**EI 2251/EI 41/EI 1251/080300009/10133 EI 402 – INDUSTRIAL
INSTRUMENTATION – I**

(Common to Instrumentation and Control Engineering)

(Regulations 2008/2010)

Time : Three Hours

Maximum : 100 Marks

Answer ALL questions.

PART – A (10 × 2 = 20 Marks)

1. Mention the advantages and disadvantages of stroboscope.
2. How force is measured using piezoelectric load cell ?
3. What are the disadvantages of LVDT ?
4. What are the applications of bridge type gas densitometer ?
5. List the limitations of ionization vacuum gauge in low pressure measurement.
6. What is a dead weight tester ?
7. State the laws of thermocouple.
8. List out the error in filled in system thermometer.
9. What is seeback effect ?
10. What are the advantages of fibre optic instruments ?

PART – B (5 × 16 = 80 Marks)

11. (a) (i) Explain the torque measurement using strain gauge and magneto elastic type torque meter. (12)
(ii) Explain the working of A.C Tachogenerator. (4)

OR

- (b) (i) Explain the speed measurement using capacitive tacho and drag cup type tacho. (10)
(ii) Describe the stroboscopic method of rotational speed of a machine. (6)

12. (a) Explain the piezo electric type accelerometer in detail and mentions the application with diagram. (16)

OR

- (b) Explain the following with sketch :
(i) Float type densitometer. (8)
(ii) Birdy type gas densitometer. (8)

13. (a) Discuss the method of pressure measurement using
(i) Bourdon tube
(ii) Capacitive type
(iii) Bellows with neat diagrams. (16)

OR

- (b) Explain the measurement of vacuum using
(i) McLeod gauge
(ii) Ionization gauge with sketch. (16)

14. (a) Describe the sources of errors and their compensation of filled in system thermometer.

OR

- (b) Explain in detail the RTD signal conditioning and the characteristics.

15. (a) Discuss the construction and working principle of thermocouple. Also discuss the cold junction compensation techniques. (16)

OR

- (b) With a neat sketch, explain the construction and working principle of
(i) two colour radiation pyrometer. (8)
(ii) optical pyrometer. (8)